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ABSTRACT

Proceedings are presented of a conference on non-academic careers for linguists, which was co-sponsored by the Linguistic Society of America and the CUNY Ph.D. Program in Linguistics. The presentations are under two headings: (1) "What Linguists Can Do," and (2) "What Linguists Are Doing." The first section includes contributions by Frederick G. Mish, W. O. Baker, Frank J. Macchiarola, Tracy C. Gray, Lothar Simon and Alan Westaway. Their presentations deal with the contributions linguists may be able to make in the fields of lexicography, computers, education (non-teaching), language planning and government policy, publishing and translation. The second section includes contributions by Norma Rees, Stuart Flexner, Mark Liberman, Robbin Battison, William Labov and Marcia Farr. Their presentations focus on the fields of language disorders, lexicography, computers, business, language policy and social problems, and language research. The volume concludes with a transcript of the question and answer period. (AMH)

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CAREERS IN LINGUISTICS: NEW HORIZONS

Edited by
Mary M. Niebuhr

Proceedings of a conference co-sponsored by the Ph.D. Program in Linguistics of the Graduate Center of City University of New York and the Linguistic Society of America and held in conjunction with the LSA Annual Meeting (New York, New York, December 1981).

ERIC Clearinghouse on Languages and Linguistics
Linguistic Society of America
May 1982

ACKNOWLEDGMENTS

Planning for the conference on CAREERS IN LINGUISTICS: NEW HORIZONS started late in 1980, and on the way through 1981, various means of support materialized. First, the Planning Committee deserves a great deal of the credit. Their numerous explorations, contacts, and other delegated responsibilities brought the plans forward. To these colleagues (Charles Cairns, Ricardo Otheguy, and William Stewart) and students (Susan Jagendorf and John Klosek), I express my gratitude. To another committee member, Arthur Bronstein, the Executive Officer of the Linguistics Program at the CUNY Graduate Center, I offer special thanks. It was his vision, patience, and support--more than anyone else's--that nurtured this project into being. His contacts with the administration of the Graduate Center helped us "to squeeze blood from a turnip," to find money where we thought there was none. His guidance pointed us toward the Linguistic Society of America where we solicited cooperation and got Victoria A. Fromkin's enthusiastic response and tapped the Washington staff's vast knowledge of the field. In Washington, Maggie Reynolds kept in contact, gently advising and guiding. Adroitly she wove our plans into the warp of the 56th LSA Annual Meeting. Then, as we were heading into the stretch, she put us in touch with Mary Niebuhr of ERIC, and the publication of these proceedings was set. You can see, then, that this whole venture has been a sharing experience, and I, as the pivot person, thank one and all.

—Donald R. H. Byrd

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INTRODUCTION

In 1976, a study from the Center for Applied Linguistics by Mary Levy and others concluded that "the supply of linguists at the doctoral level will continue to exceed demand." It made the point that linguists can "contribute toward needed...materials (and)...training in the uncommonly taught languages and area studies." Based on information gathered from working linguists, graduate students, and department heads, that study focused, for the most part, on linguistic positions in academia.

Two years before the CAL study, the first alarm was sounded by Roger Shuy at the 25th annual Georgetown University Round Table. He said, "As a result of its isolative behavior, linguistics is now beginning to suffer from not having a natural apprenticeship domain, making it difficult for graduates to find work." Shuy argued that the linguist must overcome feelings of "elitism and discover methods of breaking into such areas as information processing and retrieval, medicine, psychiatry, lexicography, publishing, the communications industry, and educational consulting." Shuy's words, indeed prophetic, ring just as true today as they did in 1974.

Early in 1979, the Ph.D Program in Linguistics at the Graduate Center of the City University of New York, acutely aware of the diminishing number of linguistics positions in academia, started exploring alternatives, and there were many. From the unique perspective of New York City, a microcosm of the world in so many ways, we looked at the alternatives in the city; the publishing centers, the communications centers, the business and banking centers, and the largest public educational system in the world. All seemed to ache for linguistic applications and solutions. Many discussions later, we had an acronym: GRAUL (Graduate Program in Applied and Urban Linguistics). Then, it clicked--almost in the manner of a Busby Berkeley "Let's-put-on-a-show!" movie plot. What we needed was a conference to focus on the careers in the nonacademic areas that we had isolated for GRAUL. Realizing the timeliness and the general concern of the employability of linguists, we solicited

the support of the Executive Committee of the Linguistic Society of America. Letters were exchanged and LSA and the CUNY Ph.D Program in Linguistics agreed to co-sponsor two panels at the 1981 Annual Meeting of LSA to be held at the Grand Hyatt, just down the street from the CUNY Graduate Center.

The CAREERS Planning Committee, which I headed, committed itself to this auspicious collaboration and sharpened its focus. Coincidentally we decided to zero in on most of the areas to which Shuy referred in 1974. Relying on input from the LSA Executive Committee and Secretariat and contacts by members of the CAREERS Planning Committee, a suitable dichotomy emerged--two panels, one devoted to "What Linguists Can Do" and the other to "What Linguists Are Doing." The first panel would include nonlinguists, all leaders in their special areas and familiar with what linguists do. The second would include linguists employed or currently active in these nonacademic areas. The field of lexicography received extra treatment through the efforts of Dr. Arthur Bronstein and the staff of the Office of the President of the Graduate Center. Over 30 English dictionaries were donated to the Graduate Center library and were placed on exhibit there during the LSA Annual Meeting.

WHAT LINGUISTS CAN DO (Panel 1)

In his opening remarks, Dr. Arthur Bronstein pointed out that only a small percentage of trained linguists secure teaching positions and tenure. Those who do not must look at other ways to use their linguistic training. These panels represent some of the other sources of employment for linguists.

Dr. Fred Mish, Editorial Director of G. and C. Merriam Co., spoke about the sort of lexicography with which he had experience, editing monolingual English dictionaries. Mish commented on the possible need for linguists in the area of bilingual lexicography, an area outside his own experience, but he cautioned that the making of general dictionaries is not a "major growth industry." Yet, it is not stringent in its requirements: It requires certain qualities of mind and temperament; clear, concise writing ability; and patience and persistence in lonely work. Linguists might be able to make some contributions to lexicography, Mish suggested, particularly by developing new taxonomies of "grammatical functions" and "semantic properties" of words if they are better than the traditional parts-of-speech taxonomies found in current dictionaries. The development of a low-level learner's dictionary, neither bilingual nor advanced, may await the magic touch of linguists. But, Mish contended, if linguists are to make a more significant contribution to dictionary-making, they must be able to overcome the bias that treatment of the lexicon is an "intellectual backwater." The

linguist's contribution to lexicography will not be known, Mish concluded, until more linguists work in the field.

In his remarks, Dr. W. O. Baker, Chairman of the Board (retired) of Bell Labs, covered a wide range in the areas of information processing and retrieval, communications, and automatic speech. He emphasized that modern industry already recognizes the skills of linguists. For 20 years, the telecommunications industry has used a system that is based on a careful reckoning of language pauses. He cited another need--the minimum bandwidth for speech intelligibility and digital encoding. New applications of linguistics in this fast growing industry lie in the automatization of commerce, e.g., robotic manufacturing and computers in the handling of trade and services. "While the dependence of data processing on machines is well-established, the convergence of this with language handling is still at an early stage," he asserted. Yet, the study of natural language has already had an impact on computers, leading to new examinations of computer language, and has seen a 7% gain in production among manufacturers with computer support at a time when labor productivity in other areas has declined. Within the concept of information standards, there must be language standards as well, and linguists have much to contribute to "formatting" and processing standards. Baker concluded that "language is supposed to tell meanings," and he welcomed linguists to inhabit the new frontier.

Dr. Frank J. Macchiarola, Chancellor of the New York City Public Schools, spoke about the common dilemma that linguistics shares with the other humanities and the social sciences: The future for most Ph.D's in these fields rests significantly outside higher education and will require greater flexibility in their doctoral preparation. Also required by outside circumstances is the need for "more practical orientation, for both the (Ph.D.) student and the program training that student." Within primary and secondary education, a strong base in linguistics would prove invaluable, specifically in bilingual education, testing, and counseling. Macchiarola concluded that for a linguist, like any job-hunter, the major task is to find within "yourself some appropriate skills that can be taken to that job."

The next area covered was language policy by Dr. Tracy Gray, Director of the Office of Language and Public Policy at the Center for Applied Linguistics. She outlined three areas--how linguists can become better lobbyists, what skills are needed, and what the chances are for employment. Since the Consolidation Act of 1981, many decisions affecting language and language policy will be made on the state and local levels, and linguists, if they care to repoliticize themselves, have much to

contribute to the formulation of this legislation. In order to influence public policy, Gray mentioned four "musts": 1) Know the legislators; 2) keep them informed; 3) know the legislative schedule; and 4) find an organization to support your efforts. In the area of public policy, "the need for advocates with expertise in linguistics is increasing," and with the tightening of federal monies, the next few years will "witness the formulation of more coalitions and interest groups in the area of education and language. Linguists can lead the ranks if they so choose."

Mr. Lothar Simon represented the field of publishing. Drawing on his years of experience with Longman and Mouton and his own publishing endeavors, Simon focused his remarks on educational publishing, which is "somewhat less subject to the ups and downs of the economy," although at the present time there is a lot of change among publishing companies. The area of ESL and EFL publishing is a growing field. Since there are very few college programs that train people for publishing, a linguist is best off "trying to get in whichever way is possible." But if one is to succeed, one must think beyond linguistics. If a linguist chooses to be an editor, there are two types--1) those who make the decisions about what manuscripts to publish (acquisitions) and 2) "desk" editors. Beyond editing, linguists could explore copy writing, marketing (the ability to use language convincingly), production, publishing finances, and general management. The best ways to get into publishing are through personal contact, authorship, freelance work, consulting, and book-selling, but in order to get ahead, one must not be afraid to serve an apprenticeship, to "get one's hands dirty." Linguists, being adept at using language, applying logic, and conducting research, are, Simon felt, particularly fitted for publishing.

The last speaker was Mr. Alan Westaway, the Training Officer and Deputy Chief of the English Service of the United Nations in New York, who represented the area of translation. Westaway explained the Translation and Conference Services at the U.N., giving the six offical languages and the number of people who work in each language service as translators. He then spelled out the requirements: native speaker of the language, university training, broad background, and a passing score on an official examination and an interview. The most valuable combination of language expertise, Westway stated, is the combination of French and Russian. Going to a translation school would also be useful. The different ranks, responsibilities, and salaries of U.N. translators were in Mr. Westaway's concluding words.

Dr. Fromkin's statement at the end of the first panel

pointed out other areas where linguists work (in medicine, with aphasics, with deaf and deaf-blind, in neurosurgery, to mention only a few).

WHAT LINGUISTS ARE DOING (Panel 2)

Dr. G. Richard Tucker, Director of the Center for Applied Linguistics, opened the panel by citing two problems that linguists face: 1) the need to provide more information to linguists regarding realistic employment opportunities outside education and 2) the need to provide more "consciousness-raising" to prospective employers outside the academic sphere. He then went on to suggest that linguists could contribute directly to the solution of social problems through legal and political processes, through involvement in the community outside academia, and through comprehensive basic training in the areas of theory and research. In short, properly trained linguists should be able to "apply a series of techniques and skills to new situations."

Dr. Norma Rees, Dean of Graduate Studies at the CUNY Graduate Center, spoke about some of the ways linguists are active in the areas of speech pathology, audiology, and communication disorders. The positive influences of linguistics on these areas included the movement to a more embracing view of *language* development as opposed to *speech* development and the view that language consists not only of sounds but of a set of rules for generating grammatical utterances. Linguistics, she stated, has produced a broader perspective on language in such areas as aphasia, child language disorders, hearing loss, the pragmatics of language, autism and emotional disturbances, language disorders in minority children and laryngectomized persons. The analysis of sign language systems and the needs of nonspeaking populations have received helpful treatment through linguistics. Linguists, Rees emphasized, are already active in these areas, and, more importantly, clinicians are turning to linguists for help.

The Editor-in-Chief of Random House dictionaries, Mr. Stuart Flexner, spoke about what linguists are currently doing in lexicography. He estimated that among the six to eight dictionary publishers in the United States, there may be as many as 40 positions for linguists, and they concern themselves with such matters as pronunciation, the definition of grammatical terms, the various languages, dialectal variation, and etymology. Other areas of publishing that attract linguists are foreign language publishing, textbooks, editing, consulting, and elementary and high school programs in reading, writing, and spelling. Publishing in these areas is based heavily on linguistics, Flexner concluded, and linguists are needed.

Dr. Mark Liberman from Bell Laboratories broadly addressed the linguistic opportunities in the area of computers. Liberman talked about the importance of using the computer in the various kinds of research on language and the increased use of computers. He circumscribed three general areas of opportunity for linguists in computers: 1) speech recognition or synthesis, 2) text processing, and 3) artificial language design. Liberman's advice to linguists looking for jobs in the computer field: Focus on the computer job you want and go for it. Prepare yourself by taking math and computer science. Liberman suggested that academicians include basic research or exploratory development in graduate training. To LSA, Liberman suggested that the compilation of statistics on the number of linguists in the computer field would be edifying, not only to linguists but to the people who might hire linguists.

The Manager of the Document Design Center at the American Institutes for Research in Washington, Dr. Robbin Battison, discussed the transition from an academic to a nonacademic job, which involves a change of attitudes. He then moved to a discussion of his work with "plain English" and how his work aims to make business and governmental documents easier to understand. Battison pointed out some differences he has encountered in changing to a nonacademic career: greater accountability for use of time, greater accountability for actions and results, the necessity for teamwork and review, and the "proprietary" nature of one's endeavors. Battison's advice to students: Be prepared to explain your work to any audience repeatedly; learn to write; develop your individuality; promote yourself; publish your dissertation; and never send a vitae to a nonacademic employer. (Send a resume with a cover letter.) Battison spoke optimistically about linguistic jobs in the nonacademic sector because the world today is on the move with people speaking different languages and because people keep inventing new products that require trained people to make, repair, service, and operate them.

Dr. William Labov, Professor of Linguistics at the University of Pennsylvania, emphasized that linguists can contribute to the "general welfare" by participating in legal and political processes where language is at issue. He spoke of the application of linguistics to the teaching of languages, to reading and writing, to bilingual education, and how research in historical linguistics, syntax, semantics, dialectology, and phonology could be applied to public issues of injustice and inequality. There are many ways, Labov contended, that linguistic research can be brought to bear on such social issues as those which deal with Black minorities, Appalachian speakers, Native Americans, or other linguistic minorities. All research, no matter how abstract, can have social applications if it is used

in the right way. In conclusion, Labov referred to a certain unanimity among linguists: There is an agreement on the necessity of standard languages but not when these standard languages become barriers to social mobility.

Dr. Marcia Farr from the National Institute of Education spoke of the three broad program areas of NIE: the teaching and learning program, (Farr's program), school organization and educational policy, dissemination and research on dissemination. Within Farr's area, there are teams for reading, writing, and language learning. About 75% of the staff are hired from universities, and they work outside an academic system without hope of tenure, vulnerable to the winds of political change. Two means exist for supporting research: a grants competition and a request for proposals (a direct call for a certain kind of research). Farr pointed out that working for a governmental agency requires working as a team and educating those in higher positions without entangling jargon. Farr remains optimistic for the hiring of linguists in future years, but current administrative stringencies do not appear hopeful. Farr suggested exploring independent foundations, which fund similar kinds of research, and corporations, which are beginning to take an interest in funding educational research.

Comments and questions from the floor mentioned other areas of concern for linguists like the teaching of "untraditional" populations, maintaining research interests after crossing over from an academic to a nonacademic institution, suggestions as to what computer science courses would be useful for linguists, entrepreneurial or consulting linguistics, the importance of promoting oneself through one's research, a reassessment of the linguistic possibilities in computers, and mobility in finding a job in linguistics.

Conclusions

From this special event on nonacademic careers in linguistics, various needs have become more sharply focused. There is a need to "infiltrate," to use Shuy's 1974 term, other career areas. To do this, linguists, divesting themselves of appearances of elitism, must make their skills, products, and services more viable to a nonknowing market. Preparatory programs need to link up theory and practice more closely; specifically, linguists must know how to gather and analyze data, design research, and readily adapt to changing circumstances. "L'art pour l'art," although intrinsically and epistemologically rewarding, can no longer be considered adequate if linguists are to improve their employability and increase the number of positions to be filled by them. Prospective employers will have to know how linguists can help them make better products or ren-

der better services. Perhaps part of the answer also lies in the telephone company's phrase, "Reach out and touch someone." If more linguists reach out and touch the world around them, perhaps they can make it a better place and, at the same time, make for themselves a better place in it. This special event, CAREERS IN LINGUISTICS: NEW HORIZONS, was only a tentative beginning, but the door to the world is ajar, and the breeze is refreshing.

Donald R. H. Byrd
New York, New York

PART I: WHAT LINGUISTS CAN DO

DR. VICTORIA A. FROMKIN, *Secretary-Treasurer, Linguistic Society of America.*

The problem that you are going to be discussing is the future not only for linguists but for other scholars and other people in the humanities and social sciences in our country today. There are similar meetings taking place throughout the country. I am delighted that the Linguistic Society can join with others in looking for ways that those of us whom some people think are in ivory towers can actually come down, because we really don't feel like we're in ivory towers. The world needs linguists and linguists need the world.

DR. ARTHUR BRONSTEIN, *Executive Officer, Ph.D. Program in Linguistics, City University of New York Graduate Center.*

Our Ph.D. degrees prepared many of us to do research, to teach linguistic concepts, to argue and to defend different theories of what language is, or languages aren't, how and why they are formed or develop, how they function. We became linguists who replaced linguists who were our teachers. And we have grown up training those who will, or should, replace us. The difference now is that we are no longer as sure of our role. Will our students be able to replace us? Are we training too many for so few slots? Are university administrations, granting agencies, research centers as able to absorb our trained people as we have assumed? What are we training our graduates for, if too many of them have no real opportunity to apply what they will have learned? Learning for learning's sake is not a bad idea. It never was and it won't be. But that is not the answer we give today to students who are studying linguistics to utilize it in slightly different productive and effective ways.

The statistics gathered by the Modern Language Association in annual surveys since 1977 are not encouraging for new Ph.D.'s seeking teaching positions. For example, in 1978, 99% of the Ph.D. granting departments in English, foreign languages, linguistics, and comparative literature reported that of their most recent Ph.D.'s, 64% in English and 58% in all other fields

were able to find full-time positions in postsecondary teaching. Two-thirds of the group that found full-time teaching jobs, or approximately 40%, had positions that could lead to tenure, and only a small fraction of this group are expected to eventually receive tenure. The prospects for permanent employment in teaching are consequently slim. About two-fifths of the recent Ph.D.'s, according to the surveys of that society, are now studying in postdoctoral programs, employed part-time, employed in nonacademic jobs, or unemployed.

Grant funds are already becoming harder to get in linguistics. Tenure is harder to get. Those with under five years of teaching now have to compete for the same teaching posts with those whose degrees are closer to seven or ten years old. Those of us who want to be linguists know we have something to offer that is valuable and that is needed. Some of us will continue to prepare for and be accepted for positions, and even tenure, in postsecondary education. Others will look for and find other ways of using our training. This evening we are going to find some of the ways.

LEXICOGRAPHY

DR. FREDERICK G. MISH. *Editorial Director, G. and C. Merriam Co. since 1978; editor of the Merriam-Webster Book of the World and one of several editors on others.*

I can speak about only that sort of lexicography of which I have some experience, namely the editing of general, commercial, monolingual--that is to say English--dictionaries, and the scope of my remarks is restricted in three important ways. Since my company largely confines itself to general dictionaries of varying sizes and audiences, and its few specialized word books are largely of a recreational nature, I cannot comment on the problems and opportunities which exist in the making of specialized dictionaries of the sort published by McGraw-Hill, for example. Our dictionaries are commercial, not scholarly. I hasten to add that we intend them to be based on sound scholarship, and we plan and execute them with considerable care. But if they must make their way in the world by appealing to the book-buying public at large, the work that goes into them is not supported by subventions from private or public funds.

I assume that it is still possible, and will continue to be possible, for lucky and distinguished linguists pursuing a traditional career within the academy to do important work in scholarly lexicography, to produce the dictionaries that are important to scholars of language, literature, and a number of other disciplines, and which can sustain themselves on the backlist of a university or some similar press. An outstanding example of such a linguist is Frederick G. Cassidy of the University of Wisconsin, whose work in the Dictionary of Jamaican English, and whose editorship of the Dictionary of American Regional English, are well-known. I assume further that there is work to be done in commercial bilingual lexicography, for which advanced training in linguistics, along with a detailed mastery of the structure and vocabulary of specific languages, equips one very well indeed. But I have no way of knowing how numerous such opportunities are, whether they can properly be called career opportunities, or where they are chiefly to be sought. So I return to the making of commercial English dictionaries as a possible source of careers for linguists. With respect to that question, I have some good news and some bad. First, the bad news.

There are really not very many career opportunities in my kind of lexicography. There never have been. And frankly, I do not see the making of general dictionaries as a major growth industry in our time. A student wrote to me several years ago to ask about careers in dictionary work; I remember telling him that it sometimes seemed to me that all the working lexicographers in the country could fit in a phone booth. Chances to gain practical experience may occur whenever a new dictionary project is undertaken, and several publishing houses have entered the general dictionary field in recent years. But these chances do not necessarily lead to careers. Careers in commercial lexicography are chiefly in a few publishing houses, houses that have a serious long-term commitment to publishing dictionaries, e.g., Random House, Simon & Schuster, Houghton Mifflin, perhaps a few others in addition to my own, and a small group of sturdy independent organizations like those headed by Clarence Barnhard and Mr. Lawrence Urdang. I mean no slight to any publisher or editorial organization whose name I haven't mentioned; I simply mean to typify and exemplify.

Of the positions occasionally available with one or more of these organizations, a few are best suited to those with degrees in linguistics or with substantial study in a certain area of linguistics. I am thinking here of people like a pronunciation editor, who must really know a fair amount about phonetics and phonology, as well as have a good ear for English sounds as he hears them. Or an etymologist, whose advanced degree might technically be in Romance languages, or classics, or Old English, but who has a sound background in historical linguistics.

Most of the positions on a dictionary staff do not demand linguists, however. And a few positively exclude linguists. Those who write definitions of terms in the natural sciences and the allied technologies must have their primary study in one or several such fields. Linguists may do very well as general definers, of course, but so may other people from other disciplines. It is hard, in fact, to think of any serious field of study that could not produce suitable candidates for defining. In my company, the professional staff generally runs between 20 and 30. Other organizations may have larger staffs, but I would not guess by much, and most, I feel sure, would usually be smaller. So you can see that this fair field is not full of folk. It is best to come to the editing of dictionaries expecting to find a substantial share of one's satisfaction in the usefulness of the work itself.

What skills do linguists need to develop to become lexicographers? Merriam's formal requirements for potential definers are not many, nor are they elaborate. One must be a native speaker of English, and one must be a graduate with a strong academic record from a reputable four-year college or univer-

sity. Beyond those formalities, lexicography demands not so much achieved skills, as qualities of mind and temperament, though such basic and increasingly hard to find skills as clear and concise writing never come amiss to a definer.

Working with citations (examples of English words in context) requires patience and persistence. One need not take a vow of silence to be a definer, but neither is defining achieved through committee work. One must quietly work at one's desk for seven or eight hours a day, five days a week, week after week. It is lonely work. One should enjoy the analysis and classification of small bits of information, citations again. Sometimes those bits come in enormous quantity; sometimes they are maddeningly few. One must be willing to modify the attitudes that one learned in school toward some particular word in the light of conflicting available evidence. One must possess that simple, unlearnable, elusive quality called "sprachgefuehl"; the greater the measure, the better the definer, other things being equal.

And, finally, one must be willing to accept a commercial enterprise for what it is and see commercial lexicography as an art of the possible, operating within sometimes very severe constraints of time and space. By space I mean, principally, the space within the dictionary, although sometimes the room isn't big enough either. If nothing but the platonic dictionary in your head will do, and you are inclined to view decisions that keep you from it as having been made by thieves and villains, then some other career is for you.

Where can linguists make solid contributions to lexicography? What can they bring to this endeavor that is currently lacking? In all seriousness, I must say that these questions can only be answered by linguists themselves in the events. But let me make a few quick and easy suggestions.

Can we somehow indicate the grammatical functions of words better than we now do with our traditional parts of speech categories? They cause so many difficult noun-adjective, adjective-adverb, adverb-preposition, preposition-conjunction problems. There must be a better way. But what is it? And how can it be made acceptable to very conservative dictionary users? Is there a better way of organizing verb senses than by means of the traditional transitive-intransitive distinction? Can detailed analysis of the semantic properties of words be made useful rather than cumbersome to dictionary users, and if so, how? If not, can it at least be made to help guide definers in their analysis of the citations they must examine? So far as I know, the major learners' dictionaries of English are British rather than American. Can linguists help us create one or

several that will be something more that mere Americanizations of the work of Hornby and the London dictionary staff? And/or is there a learner's dictionary? These notions may all be dead ends. I do not think that matters much. The actual contributions may come from entirely different directions. We simply will not know until more linguists have been working in lexicography for a time.

Let me return now to my statements about some of the temperamental and attitudinal demands that lexicography imposes. It seems to me that the key attitudinal barriers that linguists must overcome, if they are to make more frequent careers in and more important contributions to lexicography, is the essentially debilitating notion that work on the lexicon is a sort of intellectual backwater, nothing nearly as serious as work in phonology, or syntax, or the broader aspects of semantics, or the other major topics of contemporary linguistics. As long as such an attitude persists, if it does, linguists cannot begin to make themselves felt in lexicography. Publishers will go on publishing the same old dictionaries, and the public will go on using them, and the chance for a possibly fruitful interaction between theorists and the drudges of language will be missed. I hope the story has a different ending.

COMPUTERS

DR. W. O. BAKER. *Chairman of the Board (retired) Bell Telephone Laboratories, Inc.; present Chairman of Rockefeller University.*

The productivity of modern industry depends on language even more than has been true since the apprentice and supervisory systems of commerce began millenia ago. This is illustrated in the appellation "Information Age." The majority of our gross national product comes from information and communications, a circumstance that was achieved about five years ago. This statistic includes the 90 million people involved in education and the millions involved in banking and finance, in publishing and broadcasting. Add to this the fact that our particular industry, telecommunications, bases its content on language, for linguistics and such associated subjects as language acoustics and phonics combine to form a major part of our service. Indeed, language was a stimulus for the whole frontier, from telegraphy and the telephone to the present age of computers and communications.

Concerning computers and other digital machines, it is interesting that the first concept of Babbage and the application of Boolean algebra to bistable systems was apparently driven by mathematics and binary arithmetic. But the invention of the first digital computer by Stibitz in our laboratories in 1937 was derived from the function of telephone relay switches for the routing of electrically analog-encoded natural language.

These aspects of linguistics, basic operational elements of electrical communications and computers, have, correspondingly, been involved in another frontier--the solid state capabilities for electronics and photonics. This has been marked by the invention of the transistor and its host of semi-connected derivatives, and then more recently by the laser and the light guides. I speak of these events because they are stimulated by the challenges of language and by the need for us to communicate it and process it. These are now enabling photonics to offer vast industrial and cultural opportunities through modern electronics.

We have outlined this scene to set a context for our report on the growing need and opportunities based on "what linguists can do." In the first place, like so many important sciences and fields of humanism, engineering applications of one or another aspects of linguistics are already widespread. In our industry, for example, Time Assignment Speech Interpolation (TASI) has been used for two decades. It more than doubles the capacity of ocean cables and radio systems by switching voices automatically among various channels as the speakers pause in

their conversation. TASI involves knowledge of the principles of language usage, for into these pauses are fitted the words of other conversations. To do this, a careful statistical engineering of the pauses and their probabilities of distribution among words and sentences and even the way the sentences themselves are timed is required. Correspondingly, languages other than English have different TASI parameters.

Another practical, empirical application of linguistic variables in telephony is echo suppression, which now permits the use of satellites world-wide. We need to know in these and dozens of other projects the principles of speaking and of language structure. Knowledge of speech, quality emphasis, and acoustics have played a major role in the design of the whole national telecommunications network. Bandwidth, or the number of cycles per second of electric current required to provide appropriate speech quality, is one of the dominant economic factors in all electrical communications. Thus a prime objective of our industry has been to specify the minimum bandwidth necessary. And above all, in our own industrial history, we have tried to assure speech intelligibility and quality. We have sought to preserve and to understand the marvelous nuances of the spoken word, of the witting listener. These examples of practical design emphasize that linguists should increasingly regard their skills as already esteemed even if inadequately labeled, as this epoch of commercial information and communication moves forward.

Another scientific frontier, formed in recent times, which increasingly relates to linguistics is digital encoding (implicit in our earlier references to computers). Communication and information theory (Shannon, Bell Laboratories) has established that all information can eventually be appropriately represented in digital binary form. This joins linguists with the most rapidly moving scientific frontier and technical application of the automata. We have seen steadily developing new insights provided by the forms of digital encoding of language. The levels of redundancy, the probabilities of vowel and consonant occurrence, and various other basic linguistic features are absolutely vital for appropriate encoding and processing by computers and other digital machines. The dependence of modern nations on cryptography and cryptanalysis (and their integration with digital machines) has, likewise, vastly augmented this aspect of linguistics.

Yet another is mechanization of manufacture and the use of computers and other digital systems and attendant communications in handling trade and services. This is increasingly the base for industrial progress. Linguistics is essential to the programming, the software structure, the total machine involved

in our own industry in the operation of support systems. "Friendly operating systems," such as the UNIX (TM) have already demonstrated enormous capacity for facilitating the selection and execution of instructions for what have, until recently, been demanding and labor-intensive crafts. These are such as wiring of switchboards, of circuit boards, connection of wires in cables, installation of extensive interconnection among electronic and telephonic terminal equipment, and the implementation of customer service orders involving complicated preferences among facilities being sold or rented (e.g., cars). In turn, it is found that these programming transformations of detailed instructions have led to a new and revealing examination of the language details. Already, marked improvement in expression for manipulations and instructions for assembly in both factory and field have led to productivity gains of more than seven percent annually among users, at a time when general labor output was showing stagnation or decline.

Even in the increasing knowledge and specialization of industry, we need better clarity; we need simple phraseology to instruct and train effectively. This is not a casual or even very new observation. In 1944, one allegedly named J. H. Quick wrote, for a publication of the Institution of Electrical Engineers in London, a paper on the "turbo-entabulator." This magnificent spoof represents a deep yearning of the world of technology, of engineering, of science to have simplicity and precision in its language, something it really can't achieve under present circumstances without some expert input like yours. The original paper about the "turbo-entabulator" starts with this definition.

> The turbo-entabulator, it will be recalled, is designed to supply inverse reactive currents for use in unilateral phased attractors and also to synchronize cardinal grameters automatically. This dual capability was achieved in part as follows. Forty-one manestically spaced driving brushes were arranged to feed into the rotored slipstream a mixture of high esvile value fenal-hydro-benzamine.

A fair number of the words are meaningful; none of the sentences is; and some of the words are invented. But it is a very good parallel to what constitutes the text of industry and technology and much of science these days (from forms for ordering cars to instructions on how to fix them). I hope you are suitably attracted, and we desire that you will join.

You can help to improve intelligibility of operating practices in industry. You have the skills to introduce a regime

for the optimization of meaning and coherence with new insights on cognition. We are beginning to get a feeling for what these cognition factors are, and the linguistic elements in them are exciting. We see a whole range of opportunities for the encoding and processing of information by digital machines which will depend on some of your abilities. The role of automation in libraries which we are pursuing steadily is but one example of what will be happening. We are certain that the elegant framework of modern linguistics will take account of the ways that digital machines and their programming can expand and enrich the study of all language. These can also and most importantly assist in the transition of the historic and eminent fields of linguistic pedagogy and scholarship into certain technologic and engineering phases which will be of the highest value in the progress of the subjects and of their people.

EDUCATION (NON-TEACHING)

DR. FRANK J. MACCHIAROLA. *Chancellor, New York City Public Schools and acting principal in a high school in Queens.*

My role tonight is to speak to the issue: How professional training in linguistics can be used in a nonacademic setting, particularly in the administration of primary or secondary schools. The future for most of the young Ph.D.'s in the field of linguistics rests, in significant part, outside of the university. That means several things. First, it means that both the student and the program that trains that student will have to be more flexible in the future. Focusing on a single skill will not solve a student's problem. Doctoral training must be seen as a collection of skills, all of which contribute to the professional competency of the student. Computational skills, analytic skills, interdisciplinary perspectives, writing and teaching skills, and the ability to organize and carry out a single research project are what a Ph.D. program is all about, regardless of the subject focus.

This collection of skills, while not always immediately marketable, is always a firm basis for whatever endeavor the student pursues in an appointed setting over the long haul. To some degree, it means that those involved in programs should recognize that their program has to move toward the direction of what it is that the degree represents, a doctorate in philosophy. I think we have forgotten the fact that we are pursuing a common doctorate, and we become very professional. But we are, after all, pursuing doctorates in philosophy. And I think the fact that the university is no longer going to be the primary source of employment for many Ph.D. graduates should have us move somewhat toward the middle in our training.

Secondly, although we should always be careful as to how far we allow this independent focus to form the research and teaching agenda within the university, the changes in the economy and in public policy will require a more practical orientation, for both the student and the program training that student. An entrepreneurial sense can, and perhaps should, be adopted at the university, where there is a self-conscious effort at selling the skills of linguistics. Cross-breeding with other disciplines, creating new subfields, for example, with policy evaluation or business communication can help.

Linguistics may have an advantage over other fields in that it is already an interdisciplinary endeavor.

Third, government, business, nonprofit organizations, and labor will also have to expand their horizons and give greater attention to possible uses to which linguists (and other social science and humanities students) can be put.

In primary and secondary education, there are several areas in which I think a strong base in linguistics, combined with additional training, can be and has already proven invaluable to us. The most obvious is in the field of bilingual education. Between 40 and 50 languages are the home languages of students in the New York City public school system. So bilingual education and English as a second language are very important fields for us. And they are fields that are in a great deal of disarray. We are really not quite sure what is most effective in reaching these youngsters. To some extent, we have pulls and pushes from all directions, from the heart and from the head, and very often the heart and the head work in conflicting ways when it comes to dealing with these youngsters. We need help from people who understand the meaning of language and how language affects learning in other ways. We have a curriculum that has to be made more significant to the youngsters.

We have a need to evaluate programs to see whether or not things are working. We have slid over that in the history of education. As long as the dollars kept coming in, everybody had their chance to make it right. The result is that we have not used evaluation effectively in public schooling. The search for a most effective school, for effective teachers and principals, an effective pedagogic method, or an instructional program is new in the field of education.

Important work has also been done by psycholinguists, in cooperation with educational psychologists and developmental psycholinguists, in the area of testing. As you may know, there has been a trend in recent years away from what we call *norm-referenced testing*, comparing the student to some mythical average student, and toward *criterion-referenced testing*. *Criterion-referenced testing* attempts, first, to establish an objective measure of skills accomplishment that is expected at each grade level. The individual child is then assessed against these criteria. This should be done more objectively. It must be more diagnostic and prescriptive so that it tells what we must do once we have understood what the problems of these youngsters are. The development and evaluation of such testing procedures will need linguists knowledgeable in testing as well as in the basis of language development.

More than this, the linguist as a social scientist has an important contribution to make within the classroom, where the children are. Many of our youngsters exist in a world that is not hospitable to them or that does not understand them. People who understand books; people who understand the power of consecutive thoughts; people who understand nuance; people who understand that things are not made out of single causes, and that truth is something that while you search for it is not something that you can grasp so readily; people who have a sense of what justice is all about, who have tried to come to terms with some moral issues on a personal level and then maybe on a community level or a political level; these people are hard to come by in school systems. They are hard to come by because the jobs aren't attractive. They don't pay a great deal of money, and that is the value that everybody's working for today.

LANGUAGE PLANNING AND GOVERNMENT POLICY

DR. TRACY C. GRAY. *Director, Office of Language and Public Policy, Center for Applied Linguistics.*

I have been asked to address three questions. First, how can linguists make a contribution to the area of government relations? Or, as we say in Washington, "good old lobbying." Two, what specific skills are needed to be active and effective in this career? Three, what prospects are there for employment? Hopefully, I will be able to convince some of you to join in this effort because, frankly, we need all the help we can get.

How can linguists make a contribution? One does not have to spend a great deal of time in Washington to realize that most of the underlying issues of education are language-related. And yet, linguists play a nonexistent role in the promulgation of legislation. There are at least two possible reasons for this. One is, what a linguist does is one of the best kept secrets. It is interesting to note that when policymakers have problems with their hearts, they go see a heart specialist. However, when they have problems which are language-related, they rarely turn to the specialist, to the linguist. Rather a lawyer, an educator, or even a journalist is sought for counsel. The second possible reason for the linguist's low profile in the policymaking process is that many linguists see themselves as worlds apart from the nasty, noisy business of politics. Too many persons of accomplishment have been depoliticized and fail to see the connections between their actions and their possible influence on the political process.

What can linguists contribute to the policymaking process? A lot. With the Consolidation Act of 1981, the state and local governments will have to make some important policy decisions which involve language and education and the delivery of other social services. Some decisions will include: 1) the development of entry-exit criteria for special programs for children who do not speak English; 2) materials development and adoption --all types of materials, whether they be for English-speaking children or for children of other languages; 3) language skills and assessment; 4) standards for teacher certification. These issues are particularly acute when you look at bilingual certification, since many people are not really sure what the characteristics for a good bilingual teacher should be; 5) orientation programs for refugees; and 6) vocational training

for the unskilled worker who may or may not speak English. These are just a few of the issues that will be debated at both the state and local levels and that will ultimately give rise to some type of legislative mandate. Linguists have much to contribute to the formulation of this legislation.

What specific skills are needed to be effective? Four *musts* need to be mastered in order to get involved in the policy-making process. First, one needs to get to know the players involved, whether at the federal, state, or local level of government. It is important to gather all potentially useful information about these players in order to establish the best possible rapport, e.g., educational background, membership in other organizations, voting record, and committee assignments. The latter is critical, because the legislative process is done by committee, and friends in high places are often only as important as their committee standing.

Second, one has to keep policymakers informed of the issues through briefing papers and personal visits. This involves talking to people, not just the Congressmen themselves, but the staffers, and the people who are involved in other associations around town. Many people are lobbying for educational efforts, and they don't know what kinds of work other people are doing. It is important to form coalitions and talk with everybody. Staffers often complain about ambiguous equivocal findings and recommendations and the failure of some researchers to address the relevant policy issues. A very important aspect of government relations is ensuring that all of the players know the facts, particularly those facts that one wants them to know.

Third, one must master tracking the legislative calendar. The importance of timing cannot be overemphasized. Advocates must be aware of the reauthorization schedules of specific legislation in order to provide new research findings and relevant information when programs are being evaluated for renewal. Research must be available on time, if it is to be useful in developing the legislation, in fostering consensus building, and in promoting compromise.

Finally, and possibly most important, one must find someone, preferably an organization, who will hire him to do this kind of work. Although monies are getting tighter, the need for advocates with expertise in linguistics is increasing. By 1985, it is predicted that the majority of students in the 10 largest school districts around the country will be non-English speakers. Who will formulate school policy for these children? Linguists can make a valuable contribution to this decisionmaking process. As money gets tighter, previously "nonpolitical" organizations will see the merits, if not the necessity, of getting involved

in the distribution of funds and the setting of priorities. Researchers who have kept their hands clean will find there are no safety nets for scientific endeavors, no matter how important they feel their research is to the national need.

The next few years will witness the formulation of more coalitions and interest groups in the area of education and language. Linguists can lead the ranks if they so choose.

PUBLISHING

LOTHAR SIMON. *Publishing consultant, editor; for the past eight years, president of a major publishing house, Longman; prior to that, the sales manager for Humanities Press.*

My career has been principally in educational publishing, and that is what I want to talk to you about, the opportunities I see there for linguists. "Educational" spans the spectrum from what we call el-high through college publishing to professional and reference publishing. So-called trade publishing is really the tip of the iceberg and is similarly organized. There are also similarities with journal and magazine publishing. Newspaper journalism is a different ball game, and I wouldn't want to talk about that. So let's look principally at educational publishing.

The job situation in publishing is very difficult to discern. Publishing is somewhat less subject to the ups and downs of the economy. There tends to be a lag. In recession, things go rather well, and then, if the recession lasts too long, it goes worse. But the impact is not as great as in other industries. At the moment, there is a tremendous amount of turmoil in publishing, mostly at the top. A lot of companies are changing. There are a lot of mergers, acquisitions, divestitures; for the first time, we are seeing many of those after 10 or 20 years. That often brings a shrinkage in job opportunities. But, in general, it is a fairly stable market as far as the employment situation is concerned.

Publishing has been referred to as an accidental profession. That is an old statement, but I think it is a very true statement. Few college programs are structured toward a career in publishing because it is an accidental profession. You are best off trying to get in whichever way is possible for you. Once you are in publishing, however, there are very good opportunities for further education. Several colleges have programs now. And the Institution of American Publishers has become very active in education for publishing. The only thing about possible job opportunities in publishing: Think beyond the linguistics-related areas. Everybody wants to be an editor. Everybody. Just because people love books and it is the most visible job in publishing, that is everybody's ambition. Think a little further. There is a lot more there. Also try to think beyond the sort of publishing most directly, most closely asso-

ciated with linguistics (language arts, dictionaries, foreign languages, school books). And only in your dreams think about that pinnacle of professional achievement, publishing for linguists.

On the editorial side, there, too, are distinctions to be made. The editors one meets as a potential author or whatever or who make the news are generally referred to as acquisitions editors. These people make the decisions about what manuscripts to publish. They seek out publishing opportunities, potential authors. They zero in on the perceived need of the marketplace and find someone to write a book. These people are supported by a whole host of house editors, or desk editors, depending on the terminology one uses, and people who do copy editing, people who do proofreading, people who act as liaisons between the editorial department and production and so forth. There is a wealth of opportunities there for people with the ability to manipulate language.

There is also promotion. There is tremendous need for good copy writers. It is a skill. Promotion is an opportunity to combine artistic skills with language skills. And for those of you who have a flair for both, marketing is a wonderful opportunity. Try to write a good sales letter. It has to read really simple, and it is very hard to do. There are opportunities there for people with the ability to use language convincingly.

There are opportunities in publishing, regardless of whether you have a linguistics background or another academic background. Look at the other areas; look at production, look at fulfillment, even finance and general management.

How to get into publishing? Well, as in so many areas, the best thing that can help you is contact. I don't mean connections, I just mean simple contact, personal contact. You know someone or get to know someone, you talk and opportunities arise, you learn about them. It is the most helpful thing.

Then there are fancy ways to get into publishing--through authorship, through freelance work, through contacts one may make with editors through evaluating manuscript proposals. Or consulting in one's field of specialization. There are possibilities of getting into publishing from other jobs, such as bookselling, teaching, secretarial work, printing.

Most entry level positions are secretary-assistant to this or that whether it is editorial or marketing and so forth. The sales rep's job is a good opportunity to get into publishing and

probably the best way of learning. (Obviously these comments are intended particularly for the young people in the audience.) The best way to learn is to be a secretary or assistant to a really good editor, or marketing director, or general manager. One picks up an awful lot that way. And because it is a very unstructured industry, it is a very good way to learn the business. Then you have to make sure that you get ahead. But patience is required above all.

You may have read the little article in the *New York Times* a few days ago that quoted Richard Schneider, chairman of Simon & Schuster, saying that publishing is an apprenticeship business. It takes years and years to know how much you don't know. There is no such thing as instant success. But don't be discouraged either. Build on your strengths; build on your ability to manipulate language, to know language. Don't expect the publishing world to be waiting for you because you have academic degrees. Too many people with too many degrees want to get into publishing. Don't be afraid to get your hands dirty. And you have to pay your dues. It is that kind of work environment. You will enjoy it, and you will thrive on it. If you think of the opportunities, look for them, seize them when they arise. Make the opportunities if they don't come your way by themselves. What can linguists do? Linguists can do anything in publishing. I wish you good luck.

TRANSLATION

ALAN WESTAWAY. *Training Officer and Deputy Chief, the English Service of the United Nations.*

I am a translator; that means I translate written documents. I am not a glamorous interpreter, I'm afraid. I am a translator of written documents, a reviser, and I am the training officer in the English translation service which forms part of the translation division. I am going to try to give you a brief picture of the linguistic set-up of the United Nations and then focus on the job of translator.

The translation division is part of the largest department in the United Nations which is known as the Department of Conference Services. Conference Services is the department which deals with helping to facilitate the enormous numbers of meetings that we have down the road at the United Nations. Our job in the translation division is to make sure that all the documents that come before different meetings are in the six official languages of the United Nations. I saw on that table out there you had a lot of documents. If this were a U.N. meeting, all those documents would be in six languages before we could even start the meeting. In alphabetical order, those six languages are Arabic, Chinese, English, French, Russian, and Spanish.

Every document before the Security Council, the General Assembly, comes out in those six languages. So the linguistic structure dictates how the language division is organized. We have six translation services. Each service translates only into its mother tongue; that is one of our cardinal rules. I translate only into English. The Arabic service has 70 translators. The Chinese has 85. English is the smallest, 28. The French and Arabic are the same, 70. Russian has 62. Spanish, 59. Total, 374 translators.

Now let's focus on my own service, the translation into English. As you noted, we are only 28. At the moment, 19 come from the United Kingdom and Ireland; 7 come from the U.S.; we have 1 Jamaican and 1 Trinidadian.

You can see at once that this is a narrow field and a hard field to get into. How do you get into it? How do you get the job? Well, unlike Dr. Simon mentioned, it is not a question of

contacts. It is a question of passing an examination. And before you take the exam, you have to meet four requirements: 1) You have to know the right languages. 2) You have to have mother tongue English. 3) You have to have university training, university background, or equivalent (preferably also a translation school). 4) You have to have a broad background. Let's take those four requirements very quickly.

1) What languages should you know? Well, speaking only as far as the United Nations is concerned, and the English service there, you have to know French. Everybody's got to do French. That is the language we translate from most. Second after French, Russian. Thirdly, Spanish. Those three languages are the most important, and that is the order in which most of the documents come.

What is the best combination? From our viewpoint, the best combination is French and Russian. French and Spanish are rather too common a combination to be easily saleable. If you can get French and Russian, your value goes up about 100% as far as we are concerned.

2) Mother tongue, a quick word on that. You must have absolutely impeccable English. Now, this sounds easy. I thought I knew English, and I am still learning it with the help of dictionaries, grammars, and so on. Mother tongue English is perhaps the most difficult. It sounds the easiest, but command of one's mother tongue is almost as important as knowledge of the two target languages.

3) University background, that goes without saying. You have to have solid high school French and Spanish or French and Russian, plus university level in these languages. Nowadays, it is a very good idea to have gone to a translation school, such as Georgetown or Monterey or Bath or Geneva or the Sorbonne. Those sort of places are also useful.

4) You must have a broad, general background. You must be the sort of chap who reads the *New York Times* thoroughly every day. It is not enough just to have studied French or Spanish literature. You have to know a bit about politics, economics, law, and you have to have travelled to quite a few countries.

Now you can take the exam, which is the only method of entry. Of what does the exam consist? It is dominated by French, since French is our major language. You have a general paper. You have specialized papers, involving economic, legal, social, scientific, and technical French, of which you must choose two. In other words, you have to have some specialized

knowledge, such as economics or law. The third paper is a summary. You get a chunk of French or Spanish, and you have to reduce it to a third. This is what is known as the precis writing test. Precis writing is part of the job as well as translation. The fourth is the other language paper. You get eight pieces (Arabic, Chinese, Russian, Spanish, two of each), of which you have to do two. Most people do two Spanish or two Russian. Not too many people offer Arabic or Chinese.

The fifth part of the exam is the interview. It is quite a searching interview, even after you have passed the written. The interview, or the oral test, is the integral part of the exam. There is terrific competition for this exam. You might have 300 candidates from all over the world, all of English mother tongue; any English-speaking country could provide candidates for this exam.

There is not a really intricate training scheme. The training consists of doing the job and getting told how you have done it. What will the job entail? There are three main segments of the translating function. One is the actual translation, which could be anything from a letter from the Secretary General which now will be in Spanish; before it was in German. It might be some correspondence; it might be a legal job; it might be a job on outer space. You name it. It could be almost any subject under the sun dealt with by the U.N. That's translation.

There is the function of reviser, which you get to after you have slaved away as a translator, say for about 10 years. Then there is the job I mentioned of precis writing. In some respects, it is much more difficult than the job of translating, because you have to listen to a speech in quite a number of different languages, understand it (preferably in the original, mind you), make sense of it, know what the speaker is talking about, and write a summary about a third of the length. Quite a challenging job.

I remember the very first talk I gave to a school in England. I gave a rather lofty talk about how lovely translation was, what a lovely job it was, and the first question was, "Mr. Westaway, how much do you make?" So I must say, for a job involving languages, it is a very solidly paid job. I haven't got the actual figures with me, but you might start at about $20,000 and you could go up to $50,000. It is not like a doctor or a lawyer or a businessman, but it is a well-paid, interesting job. You have interesting colleagues. You have a lot of missions. You get a lot of travel. It is really not a bad job, but it is a job with very few slots and with very fierce competition.

PART 2: WHAT LINGUISTS ARE DOING

Dr. G. RICHARD TUCKER. *Director, Center for Applied Linguistics.*

We at CAL, as do each of you in your own institutions I'm sure, receive numerous inquiries about opportunities for people who have had training in linguistics. The problems that we face are manyfold, but at least two of them would seem to be the following. One is the need to provide information and awareness to our members, our colleagues, and to our students, concerning realistic possibilities open to them in addition to employment in high education. At the same time, there is obviously a definite need for consciousness-raising on the part of prospective employers. The solution is not only to inform ourselves and our students about alternative possibilities available to us, but, indeed, to raise the level of awareness of others about the special kinds of training, skills, abilities, interests, that people trained in linguistics have and could apply to their particular organization. For example, recently an employee of the Center for Applied Linguistics, a linguist, left to take a full-time job with the Internal Revenue Service, helping in document design and document simplification. This probably would not have happened five years ago. There are a variety of opportunities, and a variety of employers are slowly becoming sensitized to and aware of the special kinds of skills that those with training in linguistics can offer to their job.

I would like to draw on a comment that was made by Bill Labov in remarks that he submitted as preparation for this. Bill said that the linguist's career and contribution to society may include more than an academic or industrial position, and that linguists can contribute directly to social problems that affect the life chances of most members of their society by participating in legal and political processes where the nature of the language being used is at issue. I certainly agree with that position. At McGill, Wally Lambert and I were involved over a period of 15 years or so with one of the large school systems in Montreal. We were helping to evaluate and to conduct basic research with alternative language education programs for youngsters. The important lesson from that situation was that what was necessary was for Wally and me to reach into the community at no cost to the community.

Back in 1965-66 (we said), "We're here; we're a resource you can draw on. Let us help you if we can, and let's establish some types of collaborative and collegial relationships with the school system." What developed, at no cost to the school system and with modest funding from the Canada Council, was a 15-year program of longitudinal research that evolved into the establishment of a whole series of innovative approaches to basic education for Canadian youngsters. The corollary of this is that after we became involved, working with people out in the community, a strange thing began to happen. Over the next 15 years, throughout Canada, we never had a graduate student finish his training who could not find employment. A whole new series of opportunities were opened up to them through education, through working in hospital settings, through working in government ministries concerned with evaluation and research. The point is that we can not simply explore alternatives for our students and then wish them good luck. Rather, what we have to do is go out into the community and establish a variety of community outreach operations or become involved, whether in industry, in education, in a clinical setting, or in a hospital setting, and the opportunities for our students in nontraditional areas will certainly follow.

Our philosophy in trying to prepare students at McGill for alternatives other than institutes of higher education was to insist that the basic training for students had to be well-grounded in theory and well-grounded in research and design. We did not set out to train them in the hyphenated areas, but we set out to make sure that they had the best grounding in theoretical linguistics and theoretical psychology, research design, methods of analysis that we could. (We) were confident that they could then apply a series of techniques and skills to new situations and would have the depth and the breadth of knowledge that they could apply to new situations.

LANGUAGE DISORDERS

Dr. Norma Rees. *Dean of Graduate Studies, professor of speech and hearing sciences, City University of New York.*

The role of linguists in speech pathology and audiology, working with children and adults with various kinds of communication disorders, is varied. To be sure, some real live linguists are on the faculties of university departments whose major purpose is to educate and train clinicians who are going to deliver services to children and adults with communication disorders. And such linguists, and other linguists as well, are sometimes involved up to their eyeballs in research projects with communicatively disordered subjects. I have in mind the work of Susan Curtiss in California and Robin Chapman in Wisconsin. But, what uses are professionals in my field making of any of the information about language that linguists generate?

Because I have been in the speech and hearing sciences for a rather long time, I can speak with perspective. When I started out as an undergraduate major, in what was then rather optimistically called "speech correction," we had very few introductory textbooks; in fact, we don't have that many more now. They generally had a chapter on the normal development of *speech*. In later editions, the same textbooks had pretty much the same chapter, but it came to be called the normal development of *language*--an interesting indication of some changes in people's thinking and influences that were going on at the time. In any case, these early chapters were an explication of the theories of the stages of development that began with the birth cry and ended, mind you, *ended* with the first word. That was what we knew, or thought we knew, about the normal development of *speech*, later, the normal development of *language*.

Around the time the chapters came to be retitled, the field of linguistics underwent its own transformation, no pun intended. Before that time, the field of speech pathology and audiology had little discernable influence from the study of linguistics, although I sometimes think that speech pathology and audiology on the one hand and linguistics on the other were both influenced by much the same intellectual development--the behaviorism of the earlier part of our century. (Mostly, I am talking about speech pathology, because, in fact, linguistics has had much less effect on audiology.)

With the discovery in the 60's that language and, by extension, the competence of the language users could be described as composed of a set of rules for generating grammatical utterances, speech pathology was absolutely galvanized. We were no longer bound to single-minded concentration on sounds that came out of children's mouths. We were able to think about children's delayed language development, for example, as exhibiting rule-governed, if impoverished or primitive, linguistic performance.

From that initial breakthrough, a lot has happened, not all of it good. Let me give you one instance of something I thought was a little bit strange. I was invited to an intensive summer program for children with communication disorders. I was invited there as a language expert. I watched a very hard working young woman working with a Down's Syndrome child. (Down's Syndrome is what used to be called mongolism.) Many of these children talk better than they do almost anything else. And this was such a child. He was a pretty good talker; the problem was that it was very hard to understand him. As I listened to him carefully, I came to the conclusion that there were two major reasons why it was hard to understand him: One was that he talked extremely fast. The other was that he tended to leave out chunks of sentences.

What the clinician was working on shows you one of the perhaps poorly judged early influences of linguistics on speech pathology. What she was working on was training him in the rule of "is verb -ing." She was not getting anywhere because he was not learning it. But it semed to me that even if he had learned it, it would not have made a lot of difference. Language disordered children tend to omit the auxiliary in "is verb -ing," but the question is what difference it would make to him if he included it. I suggested to her that it would probably be a good idea to spend a lot of time training him to slow down. I thought that if he spoke more slowly, the listener would have a fighting chance to understand him. Also, if he spoke more slowly, he was less inclined to omit so much of the sentence. That was true. But the advice I gave her made her glassy-eyed. That was the wrong kind of advice to hear from a language expert. Language experts in those days were supposed to talk about "is verb -ing," not about slowing down. So that is one of the less happy effects but, indeed, linguistics can hardly be blamed for it.

However, with the influence and often with the help and direct participation of linguists, psycholinguists, and sociolinguists, we gained a much broader perspective on language in children and adults with various types and severity of communication disorders. We developed vastly improved ways of ana-

lyzing and evaluating the language dissolution associated with aphasia in adults. We acquired detailed information about the stages normal children go through *after* the first word appears, enabling us to evaluate child language disorders and to design intervention programs based on normal sequence of development. In the case of audiology, developments have included things like an improved understanding of the effect of hearing loss on the development and maintenance of language skills and the design of tests for measuring the ability to hear and understand spoken language in aided and unaided conditions.

More recently, several exciting developments have occurred. One development is a new familiarity with pragmatics of language. It has given a refreshed look to much of our clinical language work, and, for the first time, allowed us to think seriously about the communication breakdown associated with autism and emotional disturbance. Another such development has been the work of the sociolinguists in giving us a way to distinguish between language *differences* and language *disorders* in some minority children. It is often very difficult to reach any kind of judgment about a 5-year-old child who is not speaking much, about whether the quality of his spoken language reflects the language influences of his community or whether he would be defective in his own community. We have needed, and gotten, a good deal of help, including, for example, a manual published by the American Speech-Language-Hearing Association on language differences versus language disorders, which was written in large part by members who were staff at the Center for Applied Linguistics. And in a related vein, the work on black bilingualism and second language learning affects our work with children in those groups.

The painstaking analysis of sign language systems has revealed the linguistic status of sign language of the deaf and helped us to put it in its proper place in society and in education. Most recent of all is the development of augmentative communication systems for nonspeaking populations, using information not only from linguistics but also from science and engineering. In short, a great deal of applied linguistics goes on in the delivery of services to the communication-disordered and in clinical research relevant to this population. Linguists are turning out the information that is needed. In turn, people with clinical responsibilities are asking the kind of questions that linguistics will be able to help them answer. Let me suggest one example.

Persons who have had the larynx removed through surgery learn to produce sound by various alaryngeal techniques, all of which have some limitation with respect to rate and the duration of what might otherwise be called a breath group. I have been

interested for a long time in what modification such alaryngeal speakers have to make in structure and lexical choice, for example, in order to maximize intelligibility. If we knew what the best alaryngeal speakers do, we would have a jump on teaching newly laryngectomized persons. To my knowledge, this kind of work has not yet been done. So, let me advise linguists to get involved and make themselves indispensable.

LEXICOGRAPHY

Stuart Flexner. *Editor-in-Chief, Random House dictionaries; former language consultant for Time-Life, to NBC, to various magazines, movies, and stage plays; author of The Dictionary of American Slang, I Hear America Talking, and The Readers Digest Thesaurus.*

In the United States, there are perhaps six or eight general dictionary publishers with varying size staffs. Of those general dictionary publishers, most employ somewhere around six true linguists on a full-time, almost full-time, or continuing basis. That is not very many, but it is some. There are another, perhaps, half dozen or eight dictionary publishers that publish specialized dictionaries, dictionaries on the grade school level or legal, medical, or scientific dictionaries. I would like to think that each of those may have one or two true well-trained linguists. The rest of the staffs of all dictionary-makers are composed of definers, who perhaps have a smattering of linguistics, and the usual copy editors and others who have gotten into the field through routes other than linguistics. I would say, I may be being optimistic, that there may be 40 positions for linguists in American dictionary-making. Unfortunately, linguists are rather long-lived, and those openings do not occur very often.

What they do first is the pronunciations. Two or three years ago, I had occasion to begin a new, fairly short dictionary. I had the editors for it, and the first thing I did was call up Arthur Bronstein and say, "Hey, I need a pronunciation person or two. Do you have a recent student or someone there who can do our pronunciation work for perhaps the next year or so?"

At Random House, we have a very good group of pronunciation editors, and they have to know linguistics, there is no question. I am not speaking of such difficult things as knowing the IPA and the various diacritical systems, but they do have to know linguistics, what is happening. We do use linguists to define certain of our terms. We divide our dictionaries at Random House into about 158 subject categories. We need linguists to define the grammatical terms and to define the thousands of languages themselves. We try to have people who work with the dialects to tell us which words are dialectal, which dialects they are, and how they are pronounced in various parts of the country.

The hardest nut we have to crack is etymology. There, we need linguists very much so. Primarily, we need linguists in the Indo-European languages, and we usually have up to nine different people, specialists perhaps, in various branches of the Indo-European languages. We need to fill that in with a good many people who are specialists in various non-Indo-European languages, and sometimes very small groups of languages. Linguists who know philology are increasingly hard to find. The trend in the 50's, 60's, and early 70's was that everyone wanted to get into theoretical linguistics. We were getting away from old fashioned basics and philology, which is not necessarily bad, but it is bad for dictionary-makers who want etymologists.

All American dictionaries have to be well-grounded in linguistics, and that is not only full-time positions. We will look up one day after many years of thought and say we need someone who really knows Sanskrit, not maybe for much work, but enough to pay that person for a year, or half a year, or a few months, to supplement perhaps some part-time teaching work, to help with the last year or so of graduate school, or to keep going perhaps. Recently, we needed a specialist in Greek and Latin because we needed some help on how certain terms are now pronounced. Are the doctors and lawyers who use Latin still pronouncing it the same way we say it is pronounced? We recently needed some pronunciation work done on our Russian, Polish, and Slavic languages, and we went to one or two people who will be working part-time on it over the next year. We will be working with someone, or perhaps two or three, to add some etymologies on the American Indian languages, which we feel are not properly covered. So I am speaking of full-time jobs, not very many; I am speaking, though, of a great many part-time and consulting jobs. I find it exciting work, and I think all the dictionary-makers realize that all dictionaries are based on linguistics and we do need linguists.

Another aspect of publishing is foreign languages. There, again, each house that publishes such foreign language series must have a few linguists, one or two editors on staff, (full-time, perhaps, or part-time, or consulting reps), who know the basis of language, who know how to group morphemes and graphemes, and know something about the history of languages, the languages that are being studied, know something about their grammar and underlying syntax. And there are the elementary and high school publishing programs. Many houses publish a series of reading, writing, and spelling books, and we must ground all those in linguistics. We must each employ one or two editors who really know linguistics so that it is taught properly and on a proper level, be it for specific students or for the general student.

COMPUTERS

DR. MARK LIBERMAN. *Ph.D., M.I.T., now with Bell Telephone Laboratories.*

In my particular area of interest, there are not all that many opportunities for linguists. It is not quite true to say that there is one job and I have it, but something like that is correct. However, there are some opportunities that I may be able to point to. In fact, I am going to address the general subject of jobs for linguists in some way related to computers. This is not an intellectually coherent field. It is like jobs in medicine that have something to do with microscopes, or jobs in physics that use multiplication. Still, I am going to try to give a taxonomy of types of work in the academic world and outside it in so far as I understand what is happening. I will give some very speculative ideas about the number of jobs involved, the number of jobs held by linguists now, and the direction of the changes. And at the end, a little bit of advice for people who are interested in this area.

I have to begin by making a simple-minded and not always applicable division of all technical work into research, an area we might call applied research (or exploratory development), and development. In basic research, as far as applications relating to language are concerned, the computer is a tool that not everyone always has the occasion to use. In my opinion, everyone who wants to study language would be better off if they could use computers when it was appropriate for their purposes, just as those who do medical research are better off if they can use a microscope when it is appropriate for their purposes. In applied research or exploratory development, the computer constitutes some kind of potential product or service. In development, the computer constitutes an actually intended product or service, that is, hopefully, going to be produced within a fairly strict time limit.

In basic language research, the computer is an absolutely essential tool in phonetics, the area in which I mostly work. It is probably fairly essential in the area of attempting to model language processing at various levels, too. It is perhaps useful in traditional areas such as phonology or syntax. As I said before, I think everyone should be able to use it where appropriate. In this area of basic research on language that uses computers in some truly essential central way, there are something like a hundred people with real jobs doing such things

in the western world. And most of them are in the academic world. They are mostly not linguists. They are psychologists or electrical engineers or physicists or computer scientists. This area is growing fairly rapidly, but I would say that the percentage of linguists in it is shrinking. And it is not really a field, so there are no real numbers available.

This nonfield is growing, I think, essentially because of the potential of applications related to language made possible by developments in micro-electronics. That is not always the overt reason for the growth, but the fact that computers are becoming exponentially cheaper and more widespread makes it easier for people to use them as tools in this kind of research. It also means, I think, that granting agencies, universities, and so forth feel that research that has something to do with these things is perhaps more worth funding. Right or wrong, that is the way it seems to be.

In exploratory development or development, the reasons for the apparent large opportunity are pretty simple. First, people really like to talk. They sometimes like to listen. They are willing to write if necessary. As a result, natural language is most often the easiest and best way for them to communicate. It is not always true. A very simple example where it is not true is musical notation, where talking about how to produce a piece of music is a terrible way to try to get someone else to know how to do it. Much better kinds of languages have been developed or could be developed. But most of the time, talking is the easiest way to communicate.

Second, the nature of speech and language is well enough understood that we are able to construct some simplistic, first-order simulations of various aspects of the process of speaking, listening, producing text, understanding text. These simulations are in no area terribly good, in my opinion, but they are good enough to suggest some practical possibilities.

Last, digital electronics is becoming exponentially cheaper and more widespread. So you put all of these things together: There are computers everywhere, more and more. They are becoming cheaper. They process information. People like to communicate information best through some form of natural language. It is possible to pretend that a computer is communicating information in and out through natural language to some extent. Therefore, an opportunity.

This creates a set of practical problems in three general areas. One is speech I-O, that is, speech recognition, speech synthesis. This area is probably the most developed now, and it is probably growing the fastest. The big success of a couple of

years ago was the Texas Instruments Speak and Spell toy. Now, everyone has in mind, perhaps, that their toaster oven will take instructions in English and will explain what it intends to do. Whether it will actually produce better toast as a result is quite unclear, but there is some sense that perhaps people will be more prone to buy it all of a sudden. I understand that some vice-president of Texas Instruments has projected that digital hardware to produce and process speech in some way will be a $3-billion-a-year market by 1990. I have no way to know whether this is likely to be true, but it is because of projections like that, that every electronics firm in the country is starting a speech lab, so it seems. Very few of those jobs, incidently, are going to linguists.

The second area has to do with text processing. A number of different kinds of things can be done with text by computer. You can try to have automated query systems, in which you ask a database how many widgets are in stock by typing in "How many widgets are in stock?" rather than by typing in a formula in some algebraic query language. There are attempts to allow computers automatically to extract some kind of information from text for purposes of producing an index or synopsis. There are attempts to allow computers to do some kind of pseudo-editing of people's attempts to write, ranging from correcting spelling to suggesting alternative wording.

And last, there is artificial language design. Where it is either impossible or inappropriate to use some form of natural language, attempts are made to construct artificial language that people will find easy to use. That is not necessarily a linguistic problem per se, but there are a few linguists working in that area. In my opinion, they are doing pretty good work, and, to some extent, they are able to do that work because of their linguistic training.

Incidently, the exploratory development in these areas (most of what is going on is exploratory) has resulted in few actual products. Quite a lot of such activity is going on in the academic world. Departments are either springing up or starting projects as well as electronics firms and other kinds of companies. Very few of the people getting such jobs are linguists. The exact prospects for this are a little bit unclear. It is worth pointing out that the marketplace has little technical judgment and would really like, more than anything else, to have perpetual motion...and to have automatic translation and complete speech recognition and synthesis and so forth. It will not necessarily get what it wants, but it may invest in it for a while, and then stop when it decides it won't. I think, in this case, enough actual products will be forthcoming to sustain quite a bit of growth over a number of years, although it is

possible that there will be some booms and busts.

Well, what advice can I offer? To students, the advice is, if you are interested in jobs in industry, try to get them. Make a resume and circulate it. Circulate it to personnel departments; better, circulate it to people you find out about who are actually working on projects that you think you might like to be associated with. Prepare yourself if you have a chance. In particular, take as much math as you can and take some computer science, or in some other way become a competent hacker. Those two steps are likely to be useful to you in your career and in terms of the content of your mind, regardless of whether you work in this area or any other.

To faculty members, I would suggest adding to curricula some of the kinds of preparation that I just talked about. The courses are generally already available in the universities; it is just a matter of encouraging and forcing students to take them. Even more importantly, attempt to arrange for some relevant basic research, or exploratory development, applied research in your department, perhaps in collaboration with some of the other relevant departments of your university who are probably already doing such things.

To the LSA, in trying to prepare this talk, I had very little success coming up with real numbers about how many people are doing what kind of work in the various subparts of this nonarea. It would be worthwhile to compile some numbers and some case histories for the edification of people within the field. Also, although I am not sure what form of delivery would be appropriate, there is a certain amount of education that has to be done in the case of people who would be hiring such people. They are, by and large, not entirely convinced that what linguists have to offer is anything that they want. Being given a PR booklet or something of that kind, with a few appropriate case histories, or even having a candidate able to recite some case histories may be helpful.

BUSINESS

DR. ROBBIN BATTISON. *Manager, Document Design Center, American Institutes for Research, Washington, DC.*

For the past couple of years, my friends and acquaintances have been saying, "Now, Battison, just exactly what are you doing, now that you're not doing linguistics?" And I always do the slow boil because, of course, the answer is that I am doing linguistics, but it is never perceived as that. This morning I could go on and on with technical information about my job and what I do, and what my group does and what effect we have on business and government. But I think there is a lot of information about the personal nature of the job--the psychological forces at work, and the attitudes that we have about jobs like this--the attitudes that we bring to it ourselves, and the attitudes that our friends and associates have about the job. I would like to also address what it means to make a transition between an academic and a nonacademic job, because it means changing attitudes. Making the transition was difficult in some ways and easy in others, and I would like to share some of that information with you. I will spend a bit of time talking about what our group does with "plain English," but I am only going to spend a couple of minutes on it. I would like to talk about the differences between academic and nonacademic jobs in the working situations that I have experienced, and in the third part, give you some advice if you would like to make that transition yourself.

First, a word about the parent organization, the American Institutes for Research. It is one of the granddaddies, in a sense, of the research and consulting firms, having been formed in 1946. That makes it older than most European governments and many hotels and universities in New York. The firm, broadly defined, is a social science research firm. We have helped develop the Medical College Aptitude Test (MCAT) and other screening and testing instruments for business and education. We have studied how research findings are utilized in the private sector. We study educational administration policy. We develop and evaluate programs in career education, and we get involved in a number of controversial hard and soft issues, some of which involve military training.

The Document Design Center is one group within the American Institutes for Research. We are 15 people; four of us are linguists. We include a lawyer on our staff, in case we get

into trouble with legal language. We have a handful of psychologists, two graphic designers and curriculum specialists, and some people with experience in bilingual education. For the past four years, we have been applying linguistics and psychology to business and government. Like many other people working in the "plain language field," we have a lot of advice to offer, but what we have not been pushing is just another brand of editorial horse-sense, which many people push: "Write it this way, and not that way." We dig into the research literature, into linguistics and psychology, and come up with good reasons why you *should* write it this way rather than that way, because experiments show that people will understand it better this way rather than that way. Now that is a novel approach for most people working in editorial fields.

What we have really been trying to do is to serve as brokers between the research world and the practical world that churns out paper and sends you notices in the mail, that demands you fill out forms. We are making links between researchers on the one hand that include people in linguistics, cognitive psychology, human-factor psychology, graphics, among others, and people actually in practice--teachers of writing (both in academic situations as well as in business and government), writers themselves, editors who manage large teams of writers, graphic designers, and bureaucrats who manage paper. How do we do this? We perform research ourselves, write it up, and make it accessible to these people. We train them; for example, we have trained Federal Trade Commission lawyers how to write regulations. We are training people in the Education Department how to design better forms. We do direct technical assistance with people; for example, if you are applying for financial aid these days from the government, you will fill out a form that we have designed. We work directly with people, helping to rewrite regulations, warranties, insurance policies, and instruction booklets.

We also take a long view. Rather than simply correcting pieces of paper, we also develop training programs to see that this knowledge has an "impact down the road." We have developed a curriculum in clear writing for college students, worked with collaborators at Carnegie-Mellon University to develop a graduate program in this area, and are now in the middle of a three-year project to develop clear writing curricula for lawyers. There are 160 laws schools in this country churning out lawyers who can't write, and we would like to do something about that. Also, we do some dissemination of our own. We publish a newsletter, some how-to booklets, and some technical booklets for publication specialists.

In helping keep this group of 15 people moving, I have been

a journalist, an editor, a publisher, a promoter, a project manager, a coordinator, an arranger of seminars and meetings, an occasional delivery boy and secretary, and a designer. And in being where I am with my company, I have been involved in such things as career education in high schools, programs for pregnant mothers, the administration of state educational programs, and research in gerontology--none of which I would have encountered in previous university settings.

Let me move on to the differences between working in an academic setting and working in a nonacademic setting. I have four points which I think sum up the things I have encountered and which gave me reason to pause. One is that, if you work in a nonacademic setting, you will be much *more accountable for how you spend your time*. Comparing my graduate school experience and my faculty experience with what I do now, I know how I spend my time. I have to write it down. I have to fill out a time sheet every month; it takes me a couple of hours to work it out and to make it come out right. I complained about that vociferously. Now I look on it as an aid in planning, because I know that writing that chapter took me three days, or doing this took me two and one-half hours. Next time an opportunity for a project comes along, I will say I can do that in one week; I know how much time it takes. There is a silver lining in the cloud.

Second, working in the nonacademic sector will make you much *more accountable for your actions* and for the results of your efforts because you are expected to make a difference. Someone has hired you to produce something that works. It has to work at least somewhat. You may also be hired to evaluate it, in which case you have some leeway. Third is that working in a nonacademic sector involves *much more teamwork and review* than I have ever seen in university settings. It is not a cellular effort. You do not go away for three months, write a paper, come back, turn it in, and say, "Well, this is it; this is my best effort. I worked on this; it's mine; it's done; it's beautiful." You turn it in, and it may be incorporated into something else. It may get marked up quite a bit. Someone may say, "This is the entirely wrong approach. Go back and do it over again." In general, a very rigorous review that comes straight out of the industrial idea of quality control is applied to the written products that we reformed academics produce in these settings. You have to learn how to get along with colleagues in this setting.

The fourth difference is that the work setting and the information you work with is much *more proprietary*; there is less freedom of information. You do not tell the world about what you are doing in every case. You are a bit more constrained with cocktail chatter because so and so might be com-

peting with you on a proposal, and you would like him not to know the approach you have taken until you have won that contract from the government or from whomever.

Advice that I want to give. This is especially oriented toward students, and it is advice I wish I had had as a graduate student. First, there are a number of things involved in communication skills that people should have but that they do not normally get in graduate school. You have to begin to realize how esoteric our discipline is and how unacquainted people are with it. You have to be ready to adjust your explanations and communication, whether written or oral, for people who are not linguists. I have seen graduate students, when someone asks, "Well, what are you working on these days?" go on and on about the experiment and therefore alienate a potential employer who expected a concise three-minute description. Be prepared to say it once and to say it again, and again, for different audiences. I have seen people, especially graduate students, get up at one meeting of a professional conference, give a paper, and the following year give a paper which is built on the first year, but which doesn't incorporate it in some way. They expect the audience to be right there along with them as if they were there. You have to be prepared to explain and explain again. Say it concisely; learn how to give a 10-minute talk, a 20-minute talk, and a 30-minute talk. You are going to have to do this on your own and to do it with a stopwatch.

Learn how to write. The only way you can do it is by apprenticing yourself to good writers. Be prepared to learn more about writing after you get the job. I thought I was a good writer when I started this job, and it turned out I was OK. But I had a lot to learn. And I have learned something; I have grown as a writer. Don't clone your professors or advisors; don't make yourself into a copy of these people because they would probably never make it in the outside world.

Promote yourself. Send your papers out; meet potential employers before you are on the job market. Advertise yourself. Publish your dissertation. If you have not done it, do it. And if you think it is not publishable, then why are you doing it? A last bit of advice is never send a curriculum vitae to employers in the nonacademic sector. They do not know what curricula vita are. Send a resume. A resume is different from a curriculum vitae. A curriculum vitae says what positions you held. A resume tells that you have done, and that is what employers are looking for, what your experience has been. Never send that resume without a cover letter that helps the reader understand why you are ideal for the job.

I am optimistic about jobs in the nonacademic sector. Why? Because of two basic facts about the world today: One, people move, from country to country, from city to city. This involves a lot of displacement of people speaking different languages with different cultures and with a need to learn new living skills. It means there are going to be a lot of training programs around for the next two or three decades. A lot of them are going to involve language components.

A second point about the world today: People keep inventing new products; every time you invent new products, especially high-tech products, you have to train people how to make them, repair them, service them, and operate them. That involves paperwork, manuals, training programs. So, in short, business and government need linguists even though they don't know they need them. It is up to us to let them know how useful we can be.

LANGUAGE POLICY AND SOCIAL PROBLEMS

DR. WILLIAM LABOV. *Professor of linguistics, University of Pennsylvania; author of Sociolinguistic Patterns, Language in the Inner City, Therapeutic Discourse, and many others.*

I would like to contribute some ideas on linguistic careers that go beyond academic jobs and beyond internal problems of linguistic theory, careers that contribute to the general welfare. I will look at how research in historical linguistics, syntax, semantics, dialectology, phonology, can be applied to issues of public life and, in particular, to issues of injustice and inequality that affect large numbers of people. I will talk about three areas that I have been involved in personally simply as examples of some of the problems that can involve an increasingly large number of linguists.

One of the areas where linguistics has been used to attack unjust social practices has been in challenges to standardized tests that operate as barriers to social mobility. A great deal of effective work has been done in attacks on the Wepman auditory test for example, a test that is biased against speakers of the Black Vernacular through the inclusion of items like "ruth," "roof," "death," "deaf." The case I was most involved with in a small hearing was a challenge to the examination systems in the New York City police department. A black lieutenant had failed the test for captain. Twenty-five percent of the questions concerned grammar, things like the choice between "He disapproved of my doing it." "He disapproved of me doing it." "There's a number of people." "There are a number of people." He claimed that these grammatical rules were not taught in the high school that he attended and from which he got a diploma. A small study I did confirmed that: 1) The right answers to these questions cannot be learned from listening to educated people, but only from school training; and 2) educated blacks in New York City who wrote and spoke well had not learned them in their schools. The case wasn't resolved, but the lieutenant was forced to withdraw for other reasons.

The second area includes the question of the responsibility of the law and the government to communicate information to the public. The "plain English legislation" of the last few years and the efforts of the Document Design Center which have just been discussed by Robbin Battison fall into this area. I was first involved here four years ago in a class action case which

involved 800 steel workers in Pittsburgh, Rodgers vs. U.S. Steel. It concerned a claim for back pay against nine major steel companies because of their discrimination against black steel workers and women. A national settlement had been arranged, but there was a local case in Pittsburgh still pending that might have involved more money. A committee representing the nine major steel companies, the U.S. government, and the United Steel Workers of America was proposing to send out checks for maybe six or seven hundred dollars in settlement of the national case, but the Pittsburgh steel workers would then have to waive their interest in the local suit. The issue involved the objectivity and comprehensibility of legal notice of waiver, written by that committee. Among other elements of semantic bias, there was a notice to warn the field workers that, if there was any finding that arrived out of the local case, and even if any finding of guilt was arrived at and any damages were awarded, it would be at least three years before any money could be received.

In this case, two colleagues contributed work on the readability of the document to measure the syntactic complexity. Another drew on work on the relation of syntax to semantics and the scope of quantifiers to illuminate the bias introduced by "at least, even, any." I introduced experiments in a conversational context, in the Philadelphia black community, that demonstrated that the negative bias, if any, was powerful enough to change the factual interpretation of a situation from a positive to a negative one, as in the sentence, "There's no question about us getting any money." or "There's no question about us getting the money." We also showed that the features of bias were in complementary distribution with syntactic complexity. That is, where the notice of waiver was comprehensible, it was not objective. Where it was objective, it was incomprehensible. The judge was impressed enough with our arguments to invite one of us to rewrite the document. The decision eventually went the other way. The document was used essentially as it was written, and the local case was lost. At the same time, the opinion did take note of the linguistic arguments as not without merit. It was apparently the first time the federal court had taken a look at a linguistic argument that related to the responsibility of the government to indicate clearly to members of a class action. After that point, the lawyers, when asked to produce a brief on this question, came up with nothing.

The third area of linguistic action I'd like to consider concerns the challenge to linguistic barriers incorporated in the Ann Arbor Black English case, an action involving a complaint of 11 black children against the Ann Arbor Board of Education for neglecting language barriers and failing to teach

these children how to write standard English. Judge Joiner ruled that no state shall fail to give children equal education through the neglect of language barriers. This case was initiated by black lawyers and linguists and their white allies. Black linguists, notably Geneva Smitherman, played a major role in organizing testimony. It was shown that: 1) The children used the same grammar at home as the Black English Vernacular described of children in New York, Washington, Detroit, Los Angeles. 2) This grammar showed indications of origin from an Afro-Caribbean creole, and many strong and overlapping influences of southern syntax, from the areas where blacks have lived and worked for centuries. 3) The teachers' ignorance and disregard of this dialect was one of the factors contributing to reading failure.

Joiner's decision was a model of judicial clarity. He entered into the law, took note, as a matter of established fact, the results of some 15 years' research by creolists, sociolinguists, and dialectologists. He observed that this case had nothing to do with the use of Black English in the classroom, which is what is usually discussed in public, but concerned the most effective way of teaching standard English. He described it as a cry for judicial help to ensure that another generation of black children would not be destined for illiteracy and unemployment. He gave the Ann Arbor Board of Education 30 days to present a plan for using our knowledge of Black English, limited as it may be, to improve the teaching of reading to black children--which they then did.

The effort to mobilize, to carry out experiments, is usually not paid for in these cases. It is contributed as a part of linguists' recognition that their data bear on the effort to reduce injustice and inequality. These are adversary proceedings. Should linguists take public stands? I think that principles of objectivity can be reconciled with the principles of commitment that we all hold. For some linguists, like Geneva Smitherman, the struggle for social justice is almost a full-time career. For others, like me, it is part-time. We are summer soldiers, and we retreat to the university instead of wintering at Valley Forge. But there is some continuity to this career. There are many ways that linguistic research can be brought to bear on the issues of social inequality and illegitimate authority. I have dealt with three cases involving the Black English situation. Other linguists have engaged in issues concerning the linguistic rights of Appalachian speakers, of Native Americans, of speakers of Spanish, or Catalan, or Romany. There is no area of linguistic research, no matter how abstract it may seem at the moment, that does not bear on these issues when it is used in the right way. The Pittsburgh steel case showed that that was true.

Now it is sometimes said that linguists entering the field in 1970 have no interest in social change, that economic pressure has wiped out their concern for their fellow human beings. I don't think that's so. Most linguists have a very strong social conscience. But many have been persuaded that linguistics has no value in the arena of public life, so they lead divided, almost schizophrenic, lives. The proposal I am making here is that in many ways, linguistic careers can be unified. We should not be too optimistic about what could be accomplished. There are vested interests in linguistic stratification. But, in general, I think linguists agree on one principle very clearly. We support standard languages, when they serve as instruments of wider communication, and we work within them. But we oppose the use of standard languages as barriers to social mobility. It is possible that some of those who have tried to use language to reinforce inherited privilege and illegitimate authority will be less comfortable because linguists have lived and worked. I think that is a reasonable enough ambition for any of us.

LANGUAGE RESEARCH

DR. MARCIA FARR. *Senior Associate and team leader for research on writing, National Institute of Education.*

The National Institute of Education (NIE) supports basic research in various areas of education. There are three broad program areas within NIE. I am in the Teaching and Learning Program. A second program area is concerned with such things as school organization and educational policy, and the third area has to do with dissemination efforts and research on dissemination. Within the Teaching and Learning Program, there are five divisions. I am in the one with the highest concentration of linguists, Reading and Language Studies. Other divisions are Testing, Assessment and Evaluation (which has supported some linguistic work) and Learning and Development (which focuses primarily on nonverbal cognitive and developmental work although it has supported some linguistic work.)

The other two divisions within Teaching and Learning are Teaching and Instruction and Home, Community, and Work. A substantial amount of linguistic work has been supported in the Teaching and Instruction division, mostly classroom studies of the teaching process. In 1978, the Teaching and Instruction division began funding a series of grants on teaching as a linguistic process. These were awarded primarily to linguists doing classroom research. Home, Community, and Work, to a lesser degree, also has supported work on reading and writing; it has been anthropological in large part and has been conducted in home and community settings.

Within Reading and Language Studies, there is a team on reading, a team on writing, and a team on language learning, which has supported mostly bilingual education research. I head up the writing research team. Other people on the writing research team are a sociolinguist (who sometimes calls himself an ethnographer of communication), educational psycholinguist, and master teacher. This team tries to work together to conceptualize a research agenda and to implement that agenda through contracts and grants.

One of the difficulties in working in an organization like this is that it is not an academic institution--although about 75% of the professional staff are hired from universities. Most of us are not civil servants. We do not have tenure, so we are fairly vulnerable when administrations change. I, myself, had great difficulty when I came to this job, and I have noticed that other people coming straight from a teaching and research

situation have great difficulty adjusting to working in the government. One of the reasons for this is that a government employee must in the office daily from 9 to 5. Technically, you are paid for being there, rather than for handling responsibilities. It is terribly irritating at first, if you are used to being given responsibilities and carrying them out on your own schedule. You work at night if you work better at night and so forth. It is a very difficult adjustment to give up the autonomy of controlling your own schedule. Another fact of life in government which is difficult for academics to adjust to is that almost all work is group effort, rather than individual. Your writing is not *your* writing. I have seen people become furious because they turn in something which is their best effort. Then it goes through changes; people above them in the hierarchy edit it, sometimes making it worse than it was. I have had this experience. However, you have to get used to the idea that the means in some sense justify the ends, especially if you get money for your field to support what you think is good research.

We support research through two basic mechanisms. One is a grants competition. Grants are primarily field initiated studies; we set a certain amount of money aside and write a grants competition announcement, saying we want to support research in certain areas. The winners of the competition are awarded grants to do the work they have proposed. The last several years we have had a theme of literacy. We have supported research in reading comprehension, the teaching and learning of writing skills, bilingualism, and what we call literacy (which connotes reading and writing in context.) Linguists have been increasingly supported as there have been more linguists on the staff.

The other way we implement our research agenda is through RFPs, that is, Request For Proposals. We write a very directed call for research; we say we want you to do this kind of a study with this kind of a population with this kind of metholodogy. An example of an RFP is the Document Design Project that Robbin has been working on. They are now funding themselves through various means, but, initially, the project was conceptualized by a man on our staff.

The ability to communicate beyond your own professional peer group is extremely important when you are working for the government. From time to time, we are asked to do briefing papers for someone in the administration, sometimes for members of Congress, and it is somewhat like teaching. You are teaching those who are your bosses five layers up. To be effective you have to develop the ability to explain what the research is all about, justify it, and communicate that to people who are usually intelligent and educated, but not specialists. You are always in a position,

when you work at this level in the government, of working for people who know less than you do about what you are doing.

It is well worth the effort to develop the skill of writing to people who know less than you. It is useful because it builds your program, that is, more of your projects get funded. That is what you are supposed to be doing, and it is gratifying to be able to do it successfully.

In summary, then, my job is a combination of administrative and management-type responsibilities, and intellectual and research responsibilities. At this point, agencies like mine in the federal government are struggling to survive. People who are trying to balance the federal budget want to get rid of everything that is absolutely "not essential." So it is certainly not the case that we are going to be able to hire anyone, or even have any money for this fiscal year for grants. Because of this I would like to offer suggestions about where, besides the government, you can do this kind of work. One other obvious place is foundations. Many foundations have people with academic backgrounds as their content people, an arrangement similar to government funding agencies. The people doing the actual program work are the Ph.D.'s in content areas; as you go up the hierarchy, people are less educated and less specialized, although generally intelligent and capable. Consequently, I would assume the same advantages and drawbacks in working in the government would also apply to many foundations. The other place I would suggest looking is the corporate world. There are indications that companies like Xerox, IBM, and Marriott Corporation may be taking an interest in educational or literacy research. Enterprising linguists who can combine some research and practice ideas might do well with corporations. One example is teaching literacy skills, and doing research on the teaching and learning processes as you teach or as you run the program. Feeding the research back in to improve the practice would be a very creative effort.

QUESTION AND ANSWER PERIOD

TIM HAYBICK, Temple University

I'd like to comment upon one area of employment for linguists which has not really been touched upon today--the university. I'm not talking about higher education, in particular, but rather teaching writing to the new groups--they call them nontraditional groupings of students--that are coming into the universities nowadays. My perception is that employers in English departments, specifically in the rhetoric or composition departments, like to have linguists teach these nontraditional groupings. And you can make money doing it. So, as a linguist, I've never have any trouble making money. I sometimes feel that I'm not doing linguistics, but actually I am. I'm teaching the structure of language quite practically to people. This really is an area where people can get jobs.

MARK MANDEL, Northeastern University

This is a question addressed to Dr. Battison and to Dr. Farr and to any of the others who would care to respond. After making the transition from the academic world to what is sometimes called the real world, and having developed lines of research and interest in your first incarnation, what do you find are your opportunities and limitations for continuing those research and exploratory interests, those particular abilities that you have developed, toward those lines in your second life?

BATTISON:

In my particular case, I have worked for 10 years in sign languages used by deaf people. I no longer do that except in a minor capacity. I've kept up social contacts with people but have not done any research, although I have sought, at times, to put together my new roles with clear writing in some application with the deaf. I haven't quite made that connection yet. However, I find that it hasn't been a kind of night and day experience, i.e., everything I did before this is no longer useful to me. I found myself, rather, gradually shading from one to the other. A lot of the work I did toward the end of my first career was, in fact, centered on research synthesis and making clear to others, to nonlinguistic audiences, what the linguistic research on sign language is all about, and putting it into edu-

cational practice. For me that was a smooth transition. No, I haven't made the link. Yes, I'd like to write some proposals.

FARR:

I don't feel that the transition has been difficult for me. My first research was in dialect variation and writing, rather than oral language, so that when I went to the Institute and began working on writing, there was a very easy transition. I am now more interested in questions of teaching and learning processes of writing development in children and adults. I have found, for myself, that the key was paying my dues for a certain number of years and gaining some credibility within the Institute. And then saying, I want a day a week protected (to do my own research). I know how to do what they want me to do, so I'm valuable to them. Now they will give me a day a week. What I'm doing fits in with the work I have to do at the Institute, so it's completely justified. But if you don't get the time protected, you can't get it done.

REES:

That is not a problem that faces linguists alone, or any scholars who would like to be employed in a nonacademic setting. I would call to your attention an outfit I think called the Institute for Research in History, a New York based group. I believe it was put together originally by a group of unemployed, or underemployed, historians who needed the support of one another in order to maintain their interest and activity in research in history. This has become a very well-known group, a very active one, and it's the kind of thing that can be done in any field of endeavor. It takes some people to get together to create such supportive structures. I suspect as more and more people graduate from scholarly programs and find themselves in the kind of situation Marcia Farr did, that the development and maintenance of such a support group for keeping alive a layer of research in the more esoteric and less immediately applicable subject matters will become more and more important.

ZEV BAR-LEV, San Diego University

I have a question for Mark Liberman. It's related to a course I'll be giving in the spring, Linguistics and Computers. It's two parts. After editing, you mentioned something about the creation of artificial languages that I didn't quite catch. And, what in computer science would you suggest for linguists to take in a general way, for professional usefulness?

LIBERMAN:

What I said about creation of artificial languages is that people do it all the time. Sometimes they do it well, and sometimes they do it badly. There are a small number of cases known to me where the people doing it include linguists, and they seem to me to be among the people doing it better. The circumstances could involve anything. It's any circumstances in which it is necessary for some group of people to get information in and out of a computer. And for some reason, an artificial language, say a query language, or a language for entering information about inventory control or whatever, is appropriate to be designed.

As to the second question, I think that really depends on what people want to do. The most important thing is, if possible, to achieve sufficient mastery over the relevant areas of computer technology that you can control it rather than having it control you. And that takes some time and effort. It's not a novel difficulty. It's one that linguists frequently come up against with respect to linguistic formalism. You want to have sufficient understanding of the formalisms and their mathematical underpinnings, so that you make them do what you want rather than being forced to do what they seem to suggest. The same thing is true for the use of computational techniques. As for exactly what courses you should take, that depends entirely on what's available and what you want to learn to be able to do.

LABOV:

There's a shock effect when linguists with a background in the humanities are faced with computers. You can lose six months to a year trying to get across that fundamental confrontation, concepts such as file, program, and so on. Beyond that, I think it's fairly clear. If the computer is used for analysis, you want people to know BASIC and FORTRAN. If they are going to be using it for parsing and set theoretical stuff, that appears to be LISP, and it seems to divide along those two lines very clearly.

NANCY FRISHBERG:

I am another freelance linguist. Consulting is another way people can continue to do linguistics and be a linguist but not necessarily be attached to a single institution. I am hired by various kinds of institutions which you're familiar with, including some universities and colleges. Lots of those places don't have other linguists and wouldn't want a full-time linguist because that's not what they offer. I'm thinking here of com-

munity colleges or technical institutes. But they do need people to advise their writing centers, to help them work with foreign students, to help them work with the varieties of language and communication that come up in an educational institution. I also have been working with the museums in New York, because I have background with deaf audiences. The museums are interested in deaf audiences and how they can use sign language and do that well. And I hope that I'm advising them well. I expect to be working in this area for a while.

I also should mention that I do not use the word "linguist" or "linguistics" on my business card, because I've found that that gives a glitch effect. People say, "Oh, which ones?", and I know right away that we're not in the same ballpark. So I chose a different term that seems to explain more what I do. Then if people want an expansion on that, I'm happy to give the 2-minute version or the 10-minute version of what I do. I seem to be doing OK. I eat every day, and I enjoy it. A lot of what I do ends up being like teaching. Sometimes it's called training; sometimes it's called a seminar; sometimes it's called a workshop; sometimes it's called something else. It's like teaching, and yet it's geared to the audience, usually not very many linguists out there--but lots of people who are very interested in language and why language isn't speech, and why neither language nor speech always means English, and things like that.

Anonymous Questioner:

What do you say on your business card?

FRISHBERG:

I say now "Consultant in Sign Language and Interpreting," because that's largely what people hire me for these days. But I'm thinking about the next wave too; I don't know what it will be.

LABOV:

I think I should mention the experience of Charlotte Lindy. After years of struggle, I think that Lindy had a firm foothold on a number of contracts. Perhaps the most impressive to me has been the contract with NASA. One of the publications which just came out talked about the methodology for examining the tape recording made in airplanes in the 30 seconds before they crash (seeing what linguists can contribute to minimizing the mistransmittal of information, the failure of information processes to somehow contribute to avoiding airplane accidents of this kind).

MARY ELLEN SHANKLIN, University of California, San Diego

I have a question for Robbin. You said to promote yourself before you're looking for a job, by which I assume you mean to try in some way to make yourself known to the "real world." Do you have some specific ideas on how those of us who are right now living in ivory towers can become visible before we're looking for a job?

BATTISON:

As an undergraduate, I would duplicate about a hundred copies of papers I wanted comments on and send them to people in different parts of the country working on the same thing. That led to some nice professional ties later on. (I) corresponded with people, wrote away for papers, got papers, talked with people, went to all the conferences that I could, tried to get on the programs. I thought of it as an exercise in networking which would eventually pay off in jobs. And I did publish a dissertation; that was an important point. I was told by my boss later that that was one of the crucial deciding factors in hiring me. I had published my dissertation, and, therefore, I was a good promoter. Try that.

CECILY HOFFMAN:

I am also an employed linguist. I work for TRW, a defense contracting company in California. I'd like to address the question of what kind of computer science background you need, if you're a linguist going into a computer science area. My feeling was that Dr. Liberman gave a rather bleak appearance of what opportunities are available to linguists. I think I may be the first linguist hired by TRW, and what I do is help design user languages, i.e., the language that the person communicating with the computer has to use to talk to the computer and in which the computer communicates back to the user. This is not spoken; it's written on a screen. We're talking about dialog and discourse between a system and a human being. It's fascinating work. I took two programming courses which gave me the idea of what computer scientists think about the world and six years of linguistics. (I have a Master's degree.) Computer science offered a paying job, a very nicely paying job, and the educational opportunities continue. After I work for a year for this company, they will pay for my Ph.D. I'd strongly encourage you to explore that. You do not need a degree in computer science to go into that field.

LIBERMAN:

I didn't intend to give a bleak picture of the possibilities. What I intended to give was a bleak picture of the

current situation, which I think is largely due to the fact that very few linguists have attempted to get jobs in these areas. As a matter of fact, all of the linguists that I know who have tried to get jobs doing this kind of work (I think that amounts to about eight people) have succeeded quite easily. Now to go on just a little bit more with what you said about the computer sciences background. How much you need depends a lot on what you would like to do. At a minimum, I think that what was said is what's required, i.e., you have to learn enough that you can understand the language the people will be talking and understand a little bit about how they are likely to think. Then you can learn on the job. Once you've gotten over the initial hump you will, if you apply yourself, be able to learn everything you need. For certain kinds of jobs, people will expect that you will actually be able to walk in and not just understand what people are saying, but you may have to be the one doing the talking. That, of course, requires a different kind of background. In general, I think the more of that kind of background you have the better. But at a minimum, you need to able to speak the language and then be willing to learn.